

## Method of Ensuring Service Grade Agreement in Multitask Multiuser Service Platform

### Technical field

5 The present invention relates to a method for implementing a telecom value-added service, and in particular to a method of ensuring service grade agreement SLA in service platform supporting multitask multiuser, which pertains to a value-added field in telecom networks.

### 10 Background Art

Networks are developed for fast and flexibly providing multiple services for users. Thus, the service layer is separated from the network layer and transmission layer, and a service platform supporting multitask multiuser is developed accordingly.

15 Currently, initiation of service includes three possibilities as follows: a service request is initiated at a user side; a user customizes a service which is activated automatically by the service platform at the customizing moment; the service initiated by other user calls the user. Regardless of service initiation manners, in addition to transfer for media streams such as voice signal, image signal, video signal, there exists a transfer for service call, service management or service negotiation between the user and the service, and the present invention relates to a service message of the latter manner. In a multitask multiuser service platform, when multiple users initiate services concurrently, the service platform is required to treat messages pertaining to different user and different service types concurrently. And all the messages will certainly pass through a service platform as an immediate layer between the service 20 layer and the lower network layer, which conducts management as to priorities based on the user' priority, service priority and service type, and provides treatment of a different service quality based on priority, and then the messages are transmitted to the real destination. It is, however, difficult to achieve this target now, because the multitask multiuser platform is not well developed currently, and no ideal solution for 25 ensuring and implementing the service grade agreement SLA has been found yet.

30 A conventional processing method utilizes a first-come-first-served FCFS strategy, which goes against to a flexible provision of service grade and a differentiation of user's priorities and service priorities and thereby restricts development of telecom value-added service significantly.

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### Summary of invention

40 An object of the present invention is to provide a method of ensuring service grade agreement SLA in a multitask multiuse service platform. Thus, the service platform manages the SLA based on different service grades and user grades, a user in a different priority and a service in a different priority acquires a strategy-based management, so that the service can be well operated and fairness of a user or a service in a different priority can be ensured.

The object of the present invention can be implemented as follows. A method of

ensuring service grade agreement in multitask multiuser service platform, comprising steps of:

- (A) setting user's message queues in different priorities, kernel processing queue and strategy deciding module in the service platform;
- 5 (B) processing new initial message of user's service from service layer or network layer in the strategy deciding module for accepting or not;
- (C) classifying treatment of the user's service message in the strategy deciding module based on the message priority level and the user's priority;
- (D) inputting the user's service message to corresponding user's message queue in 10 the strategy deciding module for the treatment in the kernel processing queue.

Wherein, at step (A), the strategy deciding module classifies the user's service message based on the user's priority and the service priority and respectively puts the classified user's service message in user's message queues in different priorities; the kernel processing queue conducts a corresponding process to the message therein based on different priorities of the user's message queues, so as to manage the service grade agreement in multitask multiuser service platform and provide service of 15 different qualities to users and/or services with different priorities.

Wherein, at step (A), user's priorities are ranked from low to high into three 20 grades of ordinary user, prior user and high-grade user, or ranked into a different number of grades.

Wherein, at step (A), the service priority is distinguishable based on service type including delay, dither or bandwidth required by the service, and ranked from high to low into three grades of realtime multimedia grade, realtime voice grade and non-realtime message grade, or ranked into a different number of grades.

25 Wherein, at step (B), the strategy deciding module further performs steps of:

(B1) the strategy deciding module interacts with a database used to store user information in service platform and acquires the user's priority; concurrently interacts with the service managing module in platform and acquires the priority of service to which the message pertains; and judges whether the message is an initial message 30 initiated by user's service or not;

(B2) if the message is not an initial message initiated by user's service, proceed to step (C) for treatment;

35 (B3) if the message is an initial message initiated by user's service, whether to accept the application for the user's service is determined on condition of resources in current service platform thereby to initiate the service, wherein if acceptable, proceed to step (C) for treatment, and if not acceptable, directly turn back to a corresponding message of rejection.

40 wherein, at step (C), the strategy deciding module performs steps of: in consideration of priority of the user to which the message pertains and service priority acquired at step (B1), the priority of the message is determined, and to which queue the user message is inputted is determined based on the determination thus made and the condition of current user message queue of the same grade.

Wherein, at step (D), the strategy deciding module performs steps of: according to the decision at step (C), the user's message is inputted into a corresponding user's

message queue in a different priority respectively for treatment of the kernel processing queue; the kernel processing queue performs treatment for the message based on priority of the user's message queue.

Wherein, the kernel processing queue concurrently reads out plural messages in a queue for each treatment in batches of user's messages in order to increase processing efficiency.

The present invention relates to a method of ensuring service grade agreement SLA in service platform supporting multitask multiuser, comprising user's message queues in different priorities, kernel processing queue and strategy deciding module in the service platform, the number of user's message queues being determined by the user's priority and service priority. Thus, priorities can be managed without too many priority queues, but difficulty for implementing the system is increased. Moreover, user's message queues are separated from the kernel processing queue to facilitate management to priority of user or service. The kernel processing queue will achieve an enhanced efficiency by a batch treatment, i.e., by reading out multiple messages concurrently. In the present invention, the platform is added with a strategy deciding module so that SLA can be ensured in the system based on control strategy, that is, whether to accept user-related message from service layer and/or network layer is first judged on condition of resources of the system, and the user-related message is classified based on priority of user and service and then is inputted into a corresponding user's message queues for treatment performed by the kernel processing queue.

It is advantageous in the present invention that, a different service quality can be provided in the service platform based on the user's priority, service priority and service type, and thus fairness of the user or service in a different priority can be ensured, that is to say, a service and user in a low priority will obtain service. Thus, a better service will be provided for the user, and a further increment of profit will be provided for the network operator.

### 30 Descriptions for figures

Fig.1 is a block diagram of architecture of implementing the method of ensuring SLA in a service platform supporting multitask multiuser according to the present invention.

Fig.2 is a process flow chart of the method of ensuring SLA in a service platform supporting multitask multiuser according to the present invention.

### Embodiments

The present invention relates to a method of ensuring service grade agreement in multitask multiuser service platform, and sections and their respective functions in the multitask multiuser service platform are explained in detail with reference to Fig.1.

Referring to Fig.1, multitask multiuser service platform 1 is disposed as an immediate layer between service layer 2 and network layer 3. Since there exists a two-way interaction of user and service messages between service layer 2 and network layer 3, there also exists a two-way interaction of messages between service

platform 1 as a bridge and service layer 2 or between service platform 1 and network layer 3.

5 In the present invention, service platform 1 is provided with user's message queues 11, kernel processing queue 12 and strategy deciding module 13, in addition to user information database 14 for storing user data and service managing module 15 of the platform. Wherein, user's message queues 11 are a group of queues consisting of N user message queues, each of which is used for storing user's service message and has a respective priority. User's message queues 11 are in immediate relationship with kernel processing queue 12 and strategy deciding module 13. After being classified by 10 strategy deciding module 13 based on user's priority and service priority, service messages from service layer or network layer are respectively inputted into user's message queues in different priorities for a next treatment performed by kernel processing queue 12.

15 Kernel processing module 12 is in charge of treating message in each user's message queue in a different priority, and is merely in relationship with the user's message queues, that is, service messages are extracted from user's message queues for treatment.

20 Strategy deciding module 13 accepts a user's service message from network layer 3 and service layer 2, determines priority of the user's service message and inputs it into a corresponding user message queue 11 for treatment. In course of determination of priority of the user's service message, strategy deciding module 13 requires to interact with user information database 14 and service managing module 15. Thereby to acquire information as to priority of user or service.

25 User information database 14 is used to store user-related information, such as user's priority, title of user ordering service, execution strategy of user ordering service and the like. The user information database is in charge of managing all the user-related information.

30 In service platform 1, service managing module 15 is used to manage all the service-related information, including detailed descriptions as to services provided by the multitask platform, network resources required by execution of service, service priority, etc. Service managing module 15 is in charge of treating all the service-related information provided by service platform.

With reference to Figs.1 and 2, a specific process for processing user's messages in service platform according to the present invention is explained in detail.

35 When a message from service layer 2 or network layer 3 reaches service platform 1, it is the strategy deciding module 13 that firstly treats the message. Strategy deciding module 13 interacts with database for storing user's information in service platform 1 to acquire user's priority, and concurrently interacts with service managing module 15 in service platform 1 to acquire priority of service pertaining to the message as well as whether the message is an initial message initiating a new service. If the message is the initial message, strategy deciding module 13 will decide whether to accept a new service application on condition of resources of current service platform 1. If acceptable, priority of the message is determined based on priority of user to which the message pertains and service priority, and the message is inputted 40

into a corresponding user's message queue 11 for treatment. Kernel processing queue 12 treats the message in user's message queue 11 based on its respective priority. To increase efficiency of process, kernel 12 will read out plural message each time, so the messages constitute a queue having a depth.

5 The method in the present invention provides a strategy-based service in a different service grade in service platform based on priority of user or service, and fairness exists among user's services in different grades.

Fig.1:

10 1: multitask multiuser platform;  
2: service layer;  
3: network layer;  
11: user's message queue 1 to N;  
12: kernel processing queue;  
15 13: strategy deciding module;  
14: user information database;  
15: service managing module.

Fig.2:

Start

20 Is a message initiated by a service? (Yes (是) or No (否))  
Whether to accept a new service? (Yes or No)  
Classify based on priority;  
Inputting a corresponding user's queue for treatment;  
End.

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